



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND
INTERFERENCES

In re PATENT APPLICATION of:

CHRISTIANSEN et al.

Group Art Unit: 3735

Appln. No.: 09/097,383

Examiner: David M. Shay

Filed: June 16, 1998

Title: LIGHT PULSE GENERATING APPARATUS AND COSMETIC AND
THERAPEUTIC PHOTOTREATMENT

SUPPLEMENTAL APPEAL BRIEF TRANSMITTAL

Mail Stop Appeal Brief-Patent
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Enclosed herewith is a Supplemental Brief in response to the Office Action dated
October 19, 2005.

There is no fee due. However in the event that any fee is due, the undersigned
authorizes the charging of Deposit Account No. 03-3975 (under Order No. 11765/254781)
the required fee.

Respectfully submitted

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Date: January 19, 2006



37 C.F.R. § 41.37(c)(i) - Real Party in Interest

The real party in interest for this Appeal and the present application is Danish Dermatalogical Development A/S by way of an Assignment recorded in the U.S. Patent Trademark Office at Reel/Frame 9435/0734.

37 C.F.R. § 41.37(c)(ii) - Related Appeals and Interferences

There are presently no appeals or interferences known to the Appellants, the Appellants' representatives or the Assignee, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

37 C.F.R. § 41.37(c)(iii) - Status of Claims

Claims 1-3, 8, 10-15, 18 and 23-25 are pending. Claims 13, 8, 10-15, 18 and 23-25 stand rejected and are on appeal. The claims on appeal are set forth in the attached Appendix Claim 1 is independent. Claims 2, 3, 8, 10-15, 18, and 23-25 depend from claim 1.

37 C.F.R. § 41.37(c)(iv) - Status of Amendments

A final rejection was issued on March 2, 2005. No amendments were filed after the final rejection. A personal interview was conducted on April 20, 2005. A Notice of Appeal was filed on May 31, 2005. An Appeal Brief was filed August 1, 2005.

In response to Appellants' Appeal Brief, prosecution of the application was re-opened with the issuance of a October 19, 2005 Office Action. The October 19, 2005 Office Action repeated the rejections over the prior art and added a rejection of claim 15 under 35 U.S.C. § 112, 1st paragraph and a rejection of claim 22 under 35 U.S.C. § 112, 2nd paragraph.

An Amendment under 37 C.F.R. § 41.33 was filed on the same date as this Supplemental Appeal Brief. Claim 22 was canceled to obviate the rejection under 35 U.S.C. § 112, 2nd paragraph and claim 23 was amended to correct its dependency to claim 1.

37 C.F.R. § 41.37(c)(v) – Summary of Claimed Subject Matter

Claims 1-3, 15 and 18 are described below, referring to the specification, drawings, and reference numerals. This description is intended to facilitate an understanding of the claims by the Board members and is not intended as a comprehensive claim construction, such as used in the context of an argument of invalidity or infringement. Any reference to more than one reference number or character for any particular claimed element or limitation is illustrative only and is not to be construed as an admission that the claims are limited to any, or all, of the particularly disclosed embodiments.

Claim 1 recites an apparatus for pulsed light cosmetic or therapeutic photo-treatment of the human or animal body (Figures 2 and 3; page 19, line 21 – page 21, line 5), comprising a housing (Figure 2, reference number 20; page 19, line 23), a gas filled arc lamp light source (Figures 1 and 2, reference number 13; page 19, lines 2 and 23) within said housing operable to produce a pulsed light output (Figures 6(a)-(c); page 22, lines 1-29), a power supply (Figure 1, reference number 12; page 18, line 29) connected to said arc lamp light source for operation thereof to produce a light output duration of from 10 to 70 msec, a light output aperture (Figure 2 and 3, reference number 22; page 20, lines 1-2) defined by said housing, and a filter system (Figures 2 and 3, reference number 25; page 20, lines 19-27) for filtering undesired light output wavelengths from said pulse to produce a filtered light pulse for application to said body, at least part of said filter system being interposed between said light source and said aperture, wherein said filter system consists of (a) a filter for filtering out UV and near UV wavelengths shorter than 510 nm and for passing longer wavelengths and (b) water (Figures 2 and 3; page 20, lines 4-5), said water being located in the apparatus for filtering out undesired skin heating wavelengths of light which would otherwise pass to said output aperture, wherein said filtered light pulse has an energy of at least $250 \text{ J/cm}^2/\text{sec}$.

Claim 2 recites an apparatus as claimed in Claim 1, comprising means for defining a flow path for said water (Figures 2 and 3, reference numbers 13 and 24; page 20, lines 4-5), which means is optically transparent at least in a region in which said water acts as said filter, and means for producing a flow of said water (Figure 3, reference numbers 38 and 40; page 20, lines 7-10) through said flow path.

Claim 3 recites an apparatus as claimed in Claim 2, wherein said light source (Figures 2 and 3, reference number 13) forms part of the means defining said flow path for water, whereby said water acts both to filter said light pulse and to cool said light source.

Claim 15 recites an apparatus as claimed in Claim 13, wherein means is provided for adjusting said time-weighted average light power output (Figures 1 and 6(a)-(c); page 18, line 24 – page 19, line 19 and page 22, lines 1-24).

Claim 18 recites an apparatus as claimed in Claim 1, further comprising a filter mounting for receiving a second filter having high filtration characteristics suitable to pass only selected wavelengths of light so as to dispose said second filter in a light path from said light source which light path also includes said filter comprising water (page 20, line 24 – page 21, line 5), sensor means for detecting the presence and nature of a said second filter in said filter mounting, and interlock means for preventing operation of said light source to carry out photo-treatment except when a said second filter appropriate to an intended photo-treatment is present in said mounting and/or for providing an alarm signal if a said appropriate second filter is not present in said mounting (page 12, line 21 – page 13, line 28).

37 C.F.R. § 41.37(c)(vi) – Grounds of Rejection to be Reviewed on Appeal

The October 19, 2005 Office Action rejects claim 15 under 35 U.S.C. § 112, 1st paragraph. The Office Action rejects claim 1 under 35 U.S.C. §102(b) over Eckhouse (U.S. Patent 5,620,478). Claims 1-3, 8 and 23 were rejected under 35 U.S.C. § 103(a) over Eckhouse in view of Gustafsson (U.S. Patent 5,320,618). Claims 10-15, 24 and 25 were

rejected under 35 U.S.C. § 103(a) over Eckhouse in view of Gustafsson and further in view of Anderson et al. (U.S. Patent 5,735,844) and Optoelectronics (“High Performance Flash and Arc Lamps” from PerkinElmer). Claim 18 was rejected under 35 U.S.C. § 103(a) over Eckhouse in view of Gustafsson and further in view of Vassiliadis et al. (U.S. Patent 3,703,176).

37 C.F.R. § 41.37(c)(vii) – Argument

MPEP § 2163III.A. states: “The examiner has the initial burden of presenting by a preponderance of evidence why a person skilled in the art would not recognize in an applicant’s disclosure a description of the invention defined by the claims.”

The Examiner alleges on page 8 of the October 19, 2005 Office Action that “[t]he originally filed disclosure is silent on the form which a ‘means for adjusting the time weighted average light power output’ would take.”

As discussed on page 3, lines 4-6, of the August 1, 2005 Appeal Brief, Figure 1 of the application discloses a circuit for driving the flash lamp as described on page 18, lines 24 through page 19, line 19. Examples of operating the circuit with different pulse trains with different time weighted averages are shown in Figures 6(a) – 6(c) as described on page 22, lines 1-24. It is respectfully submitted that one of ordinary skill in the art would have recognized in the disclosure the invention defined by the claims.

In rejecting claims as anticipated under 35 U.S.C. § 102(b) a reference must teach each and every element of the claim. According to MPEP § 2131:

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." Verdegaal Bros. v. Union Oil Co. of California, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete

detail as is contained in the ... claim." Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Several basis factual inquiries must be made to determine obviousness or non-obviousness of patent application claims under 35 U.S.C. § 103. These factual inquiries are set forth in Graham v. John Deere Co., 383 US 1, 17, 148 USPQ 459, 467 (1966);

Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or non-obviousness of the subject matter is determined.

As stated by the Federal Court in In re Ochiai, 37 USPQ 2d 1127, 1131 (Fed. Cir. 1995);

[T]he test of obviousness *vel non* is statutory. It requires that one compare the claim's subject matter as a whole with the prior art to which the subject matter pertains. 35 U.S.C. § 103. The inquiry is thus highly fact-specific by design . . . When the references cited by the Examiner fail to establish a *prima facie* case of obviousness, the rejection is improper and will be overturned. In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988) (Emphasis added.)

In rejecting claims under 35 U.S.C. § 103(a), an Examiner bears an initial burden of presenting a *prima facie* case of obviousness. A *prima facie* case of obviousness is established only if there is a suggestion or motivation to combine reference teachings; a reasonable expectation of success; and the prior art references, when combined, teach or suggest all the claim limitations. If an Examiner fails to establish a *prima facie* case, a rejection is improper and will be overturned. See In re Rijckaert, 9 F.3d 1531, 28 USPQ2d 1955 (Fed. Cir. 1993). "If examination . . . does not produce a *prima facie* case of unpatentability, then without more, the Applicant is entitled to the grant of the patent." In re Oetiker, 977 F.2d 1443, 1445-1446, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

Claim 1 is not anticipated by Eckhouse

Eckhouse does not disclose or suggest, *inter alia*, an apparatus for pulsed light cosmetic or therapeutic photo-treatment comprising a housing, a gas filled arc lamp light source within the housing to produce a pulsed light output, and a light output aperture defined by the housing. Eckhouse also does not disclose or suggest a filter system that consists of (a) a filter for filtering out UV and near UV wavelengths shorter than 510 nm and for passing longer wavelengths and (b) water, the water being located in the apparatus for filtering out undesired skin heating wavelengths of light which would otherwise pass to the output aperture, as recited in claim 1.

During the April 20, 2005 interview, Examiner Shay stated that Eckhouse disclose in column 10, lines 4-14, that the embodiment shown in Figure 4 may be filled with fluid, for example water, for cooling the flashlamp if high repetition pulses are used. Examiner Shay also stated that Eckhouse disclose in column 10, lines 57-62, that a flat, discrete filter may be added to one end, preferably the input end, of the light guide. Examiner Shay then concluded that these disclosures by Eckhouse anticipate claim 1.

It is respectfully submitted that Eckhouse fails to anticipate claim 1 because Eckhouse does not describe or suggest, either expressly or inherently, each and every element as set forth in the claim, either in a single embodiment, or in a combination of embodiments.

The embodiment shown in Figures 1 and 2 clearly do not, and could not, include a filter system including water. The embodiment shown in Figures 1 and 2 includes an open housing which could not possibly contain water. The only embodiments of Eckhouse that disclose water are shown in Figures 4 and 8. However, the embodiments shown in Figures 4 and 8 are couplers for properly coupling light from a flashlamp to an optical fiber. See column 8, lines 54-63. These embodiments are not components of the embodiment of

Figures 1 and 2 and are for use in apparatus designed for a completely different purpose, namely an invasive treatment in which light is conducted via an optical fiber to be emitted within the body. The light filtering arrangements with which the claimed invention is concerned are designed to deal with preventing unwanted heating of the skin when an external, non-invasive treatment is applied. No equivalent filtering requirement arises in relation to invasive devices where the light of course does not impinge on the skin.

On page 3, lines 6-8, the Examiner states that “applicant fails to explain in what way the structure of Eckhouse would not read on the claimed structure. For example, as discussed in the succeeding paragraph in applicant’s arguments Eckhouse undeniably teaches the use of water within the housing.”

As discussed above, the embodiment shown in Figures 1 and 2 of Eckhouse clearly does not, and could not, include a filter system including water. As also discussed above, the embodiments shown in Figures 4 and 8 of Eckhouse are couplers for coupling light from a toroidal flash tube into an optical fiber, they do not include a filter for filtering out UV and near UV wavelengths shorter than 510 nm and for passing wavelengths longer. As discussed previously, the flat, discrete filter discussed in column 10, lines 59-60, of Eckhouse refers to a filter added to a flexible or rigid light guide that couples the light to the treatment area. The flat, discrete filter disclosed in column 10, lines 59-60, of Eckhouse is not provided to either the embodiments shown in Figures 1 and 2 or the embodiments shown in Figures 4 and 8. Accordingly, it is respectfully submitted that Appellants have explained how Eckhouse does not “read on” the claimed structure.

What is particularly telling is the Examiner’s reference to “the” structure of Eckhouse when in fact it is clear that the Examiner is conflating several structures of Eckhouse. For example, it is clear from the Examiner’s reference to the “iris 20” on page 3, line 1, that the

Examiner is at that point discussing the structure shown in Figures 1 and 2 of Eckhouse. That is the only structure described or illustrated in Eckhouse that has an iris 20. Later, on page 3, line 8, the Examiner alleges that “Eckhouse undeniably teaches the use of water within the housing.” However, it is clear that Eckhouse never teaches the use of water within the housing of the embodiment of Figures 1 and 2, and that given the opening presented by the iris 20, that would be impossible.

It appears to be the position of the Examiner that because Eckhouse discloses all of the features of claim 1, then Eckhouse anticipates the claim. However, the requirement of a *prima facie* case of anticipation requires more than the assemblage of all of the claim features amongst a variety of embodiments of a single reference. The presentation of a *prima facie* case of anticipation requires that a single reference show the invention in as complete detail as is contained in the claim. For example, if Applicant claims a device comprising elements A, B, C, and D and a prior art reference shows a device comprising elements A and B, and another device comprising elements A and C, and another device comprising C and D, and another device comprising B and C, and so on, but does not disclose a device comprising A and B and C and D, then that prior art reference does not anticipate the claim. At best it may render the claim obvious, but the Examiner would be required to perform the analysis for an obviousness rejection and provide motivation or suggestion to modify the reference (i.e. to combine embodiments) to arrive at the claimed invention.

Such is the case here. There is no single embodiment of Eckhouse that describes the invention of claim 1 in as complete detail as is contained in the claim. There is no disclosure or suggestion by Eckhouse of a filter system including water for the embodiment shown in Figures 1 and 2, nor does the Examiner allege that Eckhouse provides any. The Examiner’s extensive discussion on pages 3-4 of the Office Action of the inherent filtering properties of

the water disclosed by Eckhouse fails to remedy the deficiencies of the rejection because Eckhouse disclose the use of water in relation to the embodiments of Figures 4 and 8.

The coupler 40 shown in Figure 4 includes a toroidal flash tube 42 inside a reflector 44 that collects and concentrates the light. The reflector 44 has a cross-section of substantially an ellipse. The toroidal flash tube 42 is positioned so that its minor axis coincides with the focus of the ellipse. The other focus of the ellipse is the edge of an optical fiber 46. See column 9, lines 28-37. The coupler 40 may be used with a fluid, e.g. water, filling the volume between the reflector 44 and the optical fiber 46. See column 10, lines 4-14.

This embodiment is for invasive application of light. One of ordinary skill in the art would not have been motivated to provide it with filtering arrangements suitable for preventing excessive heating of the skin and, in fact, no optical filtering is discussed in relation to the embodiment of Figure 4.

The coupler 40 of Eckhouse does not include a housing and a light output aperture defined by the housing. As discussed above, the light from the flash tube 42 is focused on the edge of the optical fiber 46, it is not output through an aperture in a housing, or even an aperture in the reflector 44. Therefore, Eckhouse here also does not disclose or suggest a filter system being interposed between a light source and a light output aperture and consisting of a filter for filtering out UV and near UV wavelengths shorter than 510 nm and for passing longer wavelengths and water, the water being positioned to filter out undesired skin heating wavelengths that would otherwise pass to the output aperture. Accordingly, Eckhouse cannot anticipate or render obvious claim 1.

Page 2, lines 5-7, of the March 2, 2005 Office Action states: "While applicant notes that the embodiment of Figure 4 of Eckhouse does not disclose filters, Eckhouse does

mention further embodiment, which does.” It is respectfully noted that there is no dispute between Appellants and the Examiner regarding the question of whether a filter is disclosed by Eckhouse in the embodiment of Figure 4; it is agreed that there is no filter disclosed in relation to that embodiment.

During the April 20, 2005 interview, Examiner Shay noted that column 10, lines 55-62, of Eckhouse discloses adding filters to the couplers shown in Figures 4 and 8. It is respectfully submitted that this is a misreading of Eckhouse. This passage does not continue the discussion of the embodiments of Figures 4 and 8. There is an intervening passage from lines 27-30 discussing, in contrast to invasive medical applications, devices for industrial or domestic use. The exact purpose of these is unclear, but it is in this context that line 31 goes on to discuss “one embodiment” having flexible or rigid light guides and line 46 goes on to discuss “an alternative embodiment” having a rectangular light guide. The passage relied on by the Examiner ending on line 55 forms part of a discussion beginning on line 51 relating to “The light guides discussed above,” which would seem to be those just described for domestic or industrial use. There is clearly no teaching to employ water in a filtering position in such devices.

Very importantly, apart from the presence of the light source and the light guide, the general structure of these embodiments is not described. This is particularly the case in relation to the “another alternative embodiment” with which the Schott filters are solely associated. It cannot be assumed that the general structure is one in which water can be present. Certainly, the presence of water in these embodiments is not disclosed. Neither is the light output duration or the pulse energy disclosed in relation to these embodiments.

It is respectfully submitted, therefore, that even assuming an embodiment that incorporated this disclosure (i.e. column 10, line 58) to add a flat, discrete filter to an end,

preferably the input end, of the light guide was constructed, such an embodiment would not anticipate claim 1 comprising specifically a UV cut off filter and water and would not provide the required optical parameters. The modified embodiment would also still not include a housing defining a light output aperture or a filter system as recited in claim 1.

The coupler shown in Figure 8 of Eckhouse differs from the coupler 40 only in the shape of the edge of the optical fiber 46. The embodiment of Figure 8, therefore, cannot anticipate or render obvious claim 1, either alone or in combination with any other embodiment or disclosure of Eckhouse.

With respect to the Examiner's allegations on page 4, lines 9+, of the October 19, 2005 Office Action that Appellants are attempting to distinguish the structure of the claimed invention from Eckhouse based on an intended use, such is not the case. Applicants arguments are: 1) Eckhouse does not anticipate the claimed invention because the reference does not disclose a single embodiment of Eckhouse that describes the invention of claim 1 in as complete detail as is contained in the claim; and 2) there is no motivation or suggestion to combine any of the embodiments of Eckhouse to arrive at the claimed invention.

With respect to the Examiner's arguments on page 4, lines 15+ of the October 19, 2005 Office Action, that Appellants have "conveniently ignored" the teachings of column 10, lines 46-50 of Eckhouse, it is respectfully submitted that Appellants addressed that particular disclosure in the first Appeal Brief, and have provided additional arguments in this Supplemental Appeal Brief. Moreover, with respect to Eckhouse's disclosure of "the shape of the vessel being treated," it is respectfully submitted that this is clearly a reference to the light guide's use in an industrial or domestic application and would provide no motivation or suggestion to one of ordinary skill in the art as to the use of such light guides in a cosmetic or therapeutic environment. Furthermore, it is irrelevant in that it is part of the discussion of one

alternative embodiment described in its totality between lines 46 and 50 of column 10, to which the Schott filters of line 60 have no disclosed connection. They are discussed only in relation to a still further alternative embodiment introduced in line 51.

With respect to the Examiner's reliance on Eckhouse's disclosure of a "treatment area" and his allegation that such disclosure "bespeaks of the use of such devices in a medical context" and renders any distinction of Eckhouse based on the disclosure of use in an industrial context immaterial, Appellants respectfully disagree.

First, in whatever context the device of Eckhouse may be intended for use, the area treated with light will be "the treatment area." That will remain the case whether the use is medical or is, for instance, a treatment of a material.

However, Appellants are not arguing that Eckhouse does not disclose the use of light in a "medical context." Appellants are arguing that Eckhouse discloses an apparatus for cosmetic or therapeutic treatment of the skin in Figures 1 and 2. However, this embodiment does not disclose or suggest the use of a filter system including water, and could not, and would not, be modified by one of ordinary skill in the art to include water as a filter. The embodiments of Figures 4 and 8 disclose couplers for coupling light from a toroidal flash lamp into an optical fiber for use in invasive medical procedures, or in industrial or domestic applications. They are not used in cosmetic or therapeutic treatment of a patient's skin and there is no motivation or suggestion by Eckhouse to combine the embodiments of Figures 4 and/or 8 with the embodiments of Figures 1 and/or 2, nor has the Examiner provided any such suggestion or motivation other than the disclosure of the devices in the "medical context." The flexible or rigid light guides disclosed in column 10, lines 33-34, to couple the light to the treatment area are also not used for therapeutic or cosmetic treatment of patient's

skin and there is no motivation or suggestion to combine these light guides with the embodiment of Figures 1 and 2 of Eckhouse.

The Examiner further argues on page 5 that because a fluid is disclosed to reduce losses associated with transitions from glass to air and from air to glass, it would be used not only where the light output is via a fiber, but also where it is via a light guide (i.e. a member of greater cross section than a fiber). It is obviously more difficult to transmit a sufficient amount of light via a fiber than through a light guide, so losses of light in the system are of more concern. There is no teaching that there is any need for reducing losses in the glass to air transition when a light guide is used rather than a fiber. Eckhouse's discussion at column 10, line 11, of the selection of the refractive index of the fluid to ensure trapping of the light is solely in terms of the use of a fiber, especially a clad fiber.

Claims 1-3, 8 and 23 are not obvious over Eckhouse in view of Gustafsson

Page 2, lines 20-21, of the March 2, 2005 Office Action states: "Eckhouse teaches a device as claimed except for the specific recitation of the flow path." Page 2, line 21 – page 3, line 4, of the March 2, 2005 Office Action states: "Gustafsson teaches a xenon lamp using circulating water to cool flash tubes and an optical fiber applicator with a convex tip. It would have been obvious to the artisan of ordinary skill to employ the lamp and cooling system of Gustafsson in the device of Eckhouse, since Eckhouse gives no particular cooling system design, and since the cooling system of Gustafsson make the lamp much more effective (see column 2, line 62 to column 3, line 6), thus producing a device such as claimed."

It is respectfully noted that claim 1 does not recite a flow path, as alleged in the Office Action. However, the Office Action's assertion that one of ordinary skill in the art would

have been motivated to combine these references is completely insufficient to support a *prima facie* case of obviousness.

The requisite standard for motivation to combine references requires a showing that one of ordinary skill in the art would have been motivated to combine the references, not that they may have combined the references. Under MPEP 2143, to establish a *prima facie* case of obviousness, three basic criteria must be met. Primarily, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. “To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.” *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

One of ordinary skill in the art would not have looked to Gustafsson for the reason hypothesized by the Examiner. The Examiner asserted that it would have been obvious to employ the water cooling of Gustafsson in a device of Eckhouse, because this ‘makes the lamp much more effective’. However, that is not a teaching of Gustafsson. In fact, Gustafsson fails to teach or suggest that water cooling makes lamps more effective. Rather, Gustafsson teaches that the whole construction of the embodiment of Figure 2 of Gustafsson makes the illustrated device more effective than that of Figure 1. The water cooling is not what is taught to improve efficiency; rather, Gustafsson teaches that the entire set of constructional differences between the two embodiments is what improves efficiency. In fact, the main difference between Figures 1 and 2 of Gustafsson is not the cooling, but rather

the use of a dye in circuit 7 to convert the light output to a single wavelength. This is explained clearly to be what makes the lamp of Figure 2 more effective.

With respect to the Examiner's arguments in the paragraph bridging pages 5 and 6 of the October 19, 2005, Appellants respectfully reiterate that one of ordinary skill in the art would not have been motivated to provide water as a filter in the embodiments of Figures 1 and 2 of Eckhouse. Also, one should not lose sight of the fact that Gustafsson discloses with reference to his Figure 1 an apparatus which is directly comparable with that of Eckhouse's Figure 4, whereas that of Gustafsson's Figure 2 is strikingly different. In relation to Figure 1, Gustafsson does not suggest that water cooling is useful or necessary, nor that water circulation would be desirable. This despite the fact that Gustafsson is clearly aware of these possibilities as he employs them in relation to the apparatus of his Figure 2. Clearly, one of ordinary skill in the art would understand from this that water cooling and water circulation would, according to Gustafsson, be of no relevance to the type of apparatus described by Eckhouse.

Accordingly, even if Eckhouse explicitly disclose the use of water to cool the lamp, such disclosure is not sufficient to motivate one of ordinary skill in the art to combine Eckhouse and Gustafsson.

The Examiner alleges on page 6, lines 3+ of the October 19, 2005 Office Action that Appellants have attempted to divert attention to a further aspect of Gustafsson. Presumably this is in reference to Applicants discussion of the dye in the hose or circuit 7 to convert the light to a single wavelength. The Examiner argues that because Gustafsson discusses the "much more effective" aspect of the construction of the embodiment of Figure 2 in column 3, line 6 before the discussion of the effect of the liquid in the middle pipe 71, the "clear conclusion" one of ordinary skill in the art would be left with is that the cooling water of

Gustafsson is what makes the construction much more effective. Appellants respectfully disagree.

As discussed above, column 2, line 62 through column 3, line 6, of Gustafsson is a discussion of the preferred embodiment of Figures 2-4. This disclosure includes the lamps 2, the middle pipe 71 having the hose 7 at its one end 70, the circulation pump 78 that circulates the liquid 72 through the pipe 71 and the cooling system 8 consisting of the pump 84, the filter 81, the hose 82 and the outlet pipe 83. Although the undersigned does not profess to have any particular “prescience,” it is respectfully submitted that the Examiner is incorrect that one of ordinary skill in the art “could only interpret the discussion of increased effectiveness to be referring to the aspect of the embodiment discussed in conjunction with the discussion of increased effectiveness – the circulating water aspect of this embodiment.”

Firstly, it is respectfully submitted that Gustafsson’s reference to “This arrangement” in column 3, line 4, is not limited to the cooling system 8. As discussed above, the cooling system 8 is discussed in combination with the middle pipe 71 and the liquid 72 that circulates in the middle pipe 71 and the fiber optic cable 4 and second lens 5. Secondly, it is respectfully noted Gustafsson discusses the “much more effective” aspect of his invention immediately after a discussion of the fiber optic cable 4 carrying the lens 5, not after his discussion of the cooling system 8. Under the Examiner’s mode of interpretation it would appear that the provision of the fiber optic cable 4 and lens 5 are what make the embodiment of Figure 2 of Gustafsson “much more effective” as that is the “arrangement” that is discussed immediately prior to Gustafsson’s conclusion that “its construction” is “much more effective.”

The cosmetic and/or therapeutic treatment of skin involves the delivery of light of a desired wavelength to a treatment area. It is respectfully submitted that it is Gustafsson’s use of the middle pipe 71 and the liquid 72 which converts the blue-green light to yellow light

and/or the use of the fiber optic cable 4 and second lens 5 that directs the light towards the superficial part of the body to be treated (see column 1, line 65 through column 2, line 2) that makes the embodiment of Figure 2 more effective than the embodiment of Figure 1, rather than the mere cooling of the device by the cooling system 8.

Moreover, it is this construction that gives rise to a special need for aggressive cooling in Gustafsson, as only the blue-green component of light emitted by the flashlamps will be converted into light output. All the remaining wavelengths of the flashlamp output will have to be absorbed within the apparatus and their total energy will have to be dissipated as heat. No such problem arises in Eckhouse.

Furthermore, the Office Action has overstated the message that one of ordinary skill in the art would have derived from Eckhouse. In fact, the teaching regarding any cooling function of water in relation to the device of Figure 4 is rather incidental. The real importance of the water is to couple the light of the lamp to the optical fibre end. Thus it is stated in column 10, lines 8-14, of Eckhouse that:

'The presence of a fluid reduces the losses that are associated with glass to air transitions...If a fluid is used in the reflector volume, then its refractive index can be chosen such that all the rays trapped in the conical section are also trapped in the fiber...'

Water is suggested by Eckhouse to have a useful cooling function on *'if high repetition rate pulses are used'*. (See column 10, lines 9-10.) However, high repetition rates are not used in the apparatuses of the kind described by Eckhouse or the Applicant in relation to skin treatment embodiments. To the contrary, skin treatments do not require fast repetition of pulses; once a pulse has been applied to one area of skin, the clinician or operator moves the device to another area. Therefore, in skin treatment regimens, there is ample time for cooling.

Thus, the message that one of ordinary skill in the art takes from the omission of any form of cooling in the embodiment of Figures 1 and 2 of Eckhouse, which are the

embodiments that most resemble the claimed invention in its purpose, is that even though Eckhouse is aware of the possibility of using cooling where required (see column 10 in relation to Figure 4), Eckhouse sees no need to provide cooling at all in relation to apparatus designed to carry out pulsed light treatment via the skin.

Moreover, whereas in Gustafsson and Eckhouse (see Figures 4 and 8), the lamps and their cooling system are in a large fixed unit and light is conducted to the patient via a fibre, this is not the case in the embodiment of Figures 1 and 2 of Eckhouse for which UV cut off filtering is taught to be appropriate. Thus, the devices of Figures 1 and 2 and 14-16 of Eckhouse have the lamp in an applicator which is directly applied to the patient's skin. Column 8, lines 46-47, of Eckhouse recommends that the applicator should be a lightweight unit. A skilled worker would, therefore, need a strong motivation to try to incorporate water cooling into such a hand held device.

This motivation is lacking as Eckhouse does not suggest that cooling is a useful gain from the use of water in the embodiment of Figure 4, except where a high pulse repetition rate is needed. No such high pulse repetition rate is indicated to be required in connection with the embodiments of Figures 1 and 2 featuring the UV cut off filter. Therefore, a skilled worker would not have been motivated to combine the features of the embodiments of Figures 4 and 8 of Eckhouse with the embodiments of Figures 1 and 2, which have a UV cut off filter with either the use of water for cooling shown in connection with Figure 4 or the water cooling of Gustafsson. With respect to the Examiner's comments on page 6, lines 11+, that Appellants posit no theory as to why Eckhouse would mention the usefulness of cooling when high repetition rate are used if "as alleged by applicant" high repetition rates are not used in the kind of apparatuses described by Eckhouse, it is respectfully submitted that the Examiner has mischaracterized and distorted Appellants' arguments. High repetition rates are taught by Eckhouse in relation to the apparatus for internally invasive treatments, such as

lithotripsy, in relation to Figure 4. High repetition rates are not taught in relation to the embodiment of Figures 1 and 2.

The Examiner further points to the use both in Eckhouse and in the application of dividing pulses into closely spaced sub-pulses and equates this with the reference in Eckhouse to high repetition rates in relation to Figure 4. The Examiner alleges that this contradicts Appellants' arguments that skin treatment does not require high pulse repetition rates because after treating one area by the application of the desired energy output, the operator moves the applicator to treat a different area, which would take seconds. This is clearly not what is meant by "high repetition rates" in relation to Figure 4 of Eckhouse. High repetition rates there make cooling desirable because increased energy is to be output in a shorter time. Division of a single pulse into sub-pulses has just the opposite effect by extending the total time over which the desired energy output is delivered.

With respect to the Examiner's request on page 7 of the October 19, 2005, that Appellants support their contention that a strong motivation is necessary to combine Eckhouse and Gustafsson, Appellants respectfully direct the Examiner's attention to MPEP § 2143.01II, which states: "Where the teachings of two or more prior art references conflict, the examiner must weigh the power of each reference to suggest solutions to one of ordinary skill in the art, considering the degree to which one reference might actually discredit another."

Appellants respectfully submit that Eckhouse and Gustafsson teach away from their combination for the reasons discussed above. For example, Figures 1 and 2 of Eckhouse are directed to small, hand held devices for cosmetic and/or therapeutic treatment of a patient's skin. The embodiments of Figures 4 and 8 of Eckhouse, and the device of Gustafsson are directed to large fixed units, which clearly teaches away from Eckhouse's disclosure in

column 8, lines 46-47, that the embodiment of Figures 1 and 2 should be a lightweight unit. In addition, as discussed above as Gustafsson do not disclose or suggest that the water function as an optical filter, there is no reasonable expectation of success for the combination.

With respect to claims 2, 3 and 8, Gustafsson fails to remedy the above-identified deficiency of Eckhouse. Gustafsson merely discloses a low cost, prior art device for treating of superficial afflictions using a directed light beam produced by a non-coherent light source. Moreover, contrary to the assertions of the Office Action, Gustafsson fails to teach or suggest the claimed flow path for the water. If one of ordinary skill in the art would have adopted the flow path as in Gustafsson, the water would not function as an optical filter for the light output. This is because the water is not interposed in a light path from the lamp to the outside world. In Gustafsson, the light emitted by the lamp is stopped by the fluorophore and is re-emitted along a new path to exit via the optical fibre.

In response to the Examiner's request on page 7, lines 10-14, that Appellants explain how that part of the flashlamp output of Gustafsson that does not interact with the dye fails to go through the water, Appellants respectfully note that claim 1 recites that the water is located in the apparatus for filtering out undesired skin heating wavelengths from the light which would otherwise pass to the output aperture. In Figure 2 of Gustafsson, the only light that can pass to the light output aperture is light emitted by the dye in tube 71. None of the light output of the flashlamps passes to the light output aperture. Some of the light output of the flashlamps is absorbed by the water. Some is absorbed in the walls of the chamber and other solid structures, including the tubes of the flashlamps or the tube 71 containing the dye. Some is absorbed in the dye, but all of it is absorbed somewhere. This follows from the fact that any light that enters the dye must have had an angle of incidence on the tube 71 containing the dye that will allow the light, unless absorbed by the dye, to exit the tube 71 on

eh other side and will forbid that light from being reflected along the tube. Were it not for the dye, there would be no light output. The water does nothing to filter the light output. The water is not present in the light path between the generator of the emitted light (which is the dye) and the aperture.

With respect to claims 22 and 23, Eckhouse and Gustafsson both fail to disclose or suggest a gas-filled arc lamp and wherein the gas-filled arc lamp is a xenon or krypton lamp.

Claims 10-15, 24 and 25 are not obvious over Eckhouse in view of Gustafsson, Anderson et al. and Optoelectronics

Anderson fails to remedy the above-identified deficiencies of Eckhouse and Gustafsson. Anderson merely discloses a method and apparatus for the simultaneous removal of hairs from a skin region by placing an applicator in contact with the skin surface in the skin region and applying optical radiation of a selected wavelength and of a selected flux through the applicator to the skin region for a predetermined time interval. The Anderson technique also involves cooling the skin surface in the skin region to a selected depth during the applying of optical radiation to the skin region and/or prior thereto, which allows the papilla of the hair follicles to be significantly heated without damage to the skin surface in the skin region up to the selected depth.

The Anderson applicator is utilized to cool the skin surface in the skin region to the selected depth and the selected depth is preferably at least equal to the depth of the epidermis layer of the skin (i.e. the layer of the skin closest to the skin surface). The cooling by the applicator may for example be accomplished by cooling at least the surface of the applicator in contact with the skin surface, such cooling preferably being accomplished both before and during the irradiation of the skin. The cooling of the applicator is accomplished by passing a cooling fluid through the applicator.

However, the combined teachings of Eckhouse and Gustaffson and Anderson fail to teach or suggest the claimed invention including the claimed filter system, at least part of said filter system being interposed between said light source and said aperture, as recited in independent claim 1 and dependent claims 10-15, 24 and 25.

Optoelectronics fails to remedy the above-identified deficiencies of Eckhouse, Gustaffson and Anderson. Optoelectronics merely discloses particulars of power supply construction. Therefore, the combined teachings of Eckhouse, Gustaffson, Anderson and Optoelectronics fail to teach or suggest the claimed invention including the claimed filter system, at least part of said filter system being interposed between said light source and said aperture, as recited in independent claim 1 and dependent claims 10-15, 24 and 25.

Claim 18 is not obvious over Eckhouse in view of Gustafsson and Vassiliadis et al.

Vassiliadis fails to remedy the above-identified deficiencies of Eckhouse, Gustaffson, Anderson and Optoelectronics. Vassiliadis merely discloses the use of interlocks on filters. Therefore, the combined teachings of Eckhouse, Gustaffson, Anderson, Optoelectronics and Vassiliadis fail to teach or suggest the claimed invention including the claimed filter system, at least part of said filter system being interposed between said light source and said aperture, as recited in independent claim 1 and dependent claim 18.

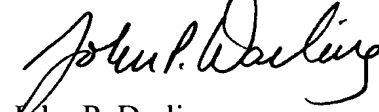
Conclusion

For at least the reasons discussed above, it is respectfully submitted that: 1) claims 1 and 22 are not anticipated under 35 U.S.C. § 102(b) by Eckhouse; 2) claims 1-3, 8, 22 and 23 are not obvious under 35 U.S.C. §103(a) over Eckhouse in view of Gustafsson; 3) claims 10-15, 24 and 25 are not obvious under 35 U.S.C. § 103(a) over Eckhouse in view of Gustafsson, Anderson et al. and Optoelectronics; and 4) claim 18 is not obvious under 35 U.S.C. § 103(a) over Eckhouse in view of Gustafsson and Vassiliadis et al. Appellants respectfully request

this Honorable Board to reverse the rejection of these claims and direct that the claims be passed to issue.

Respectfully submitted,

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JPD/bhs

Attachment:

Claims appendix
Evidence appendix
Related proceedings appendix

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37 C.F.R. § 41.37(c)(viii) - Claims appendix

1. Apparatus for pulsed light cosmetic or therapeutic photo-treatment of the human or animal body, comprising a housing, a gas filled arc lamp light source within said housing operable to produce a pulsed light output, a power supply connected to said arc lamp light source for operation thereof to produce a light output duration of from 10 to 70 msec, a light output aperture defined by said housing, and a filter system for filtering undesired light output wavelengths from said pulse to produce a filtered light pulse for application to said body, at least part of said filter system being interposed between said light source and said aperture, wherein said filter system consists of (a) a filter for filtering out UV and near UV wavelengths shorter than 510 nm and for passing longer wavelengths and (b) water, said water being located in the apparatus for filtering out undesired skin heating wavelengths of light which would otherwise pass to said output aperture, wherein said filtered light pulse has an energy of at least 250 J/cm²/sec.
2. Apparatus as claimed in Claim 1, comprising means for defining a flow path for said water, which means is optically transparent at least in a region in which said water acts as said filter, and means for producing a flow of said water through said flow path.
3. Apparatus as claimed in Claim 2, wherein said light source forms part of the means defining said flow path for water, whereby said water acts both to filter said light pulse and to cool said light source.
8. Apparatus as claimed in claim 2, wherein said flow path forms a closed circuit around which said water circulates.
10. Apparatus as claimed in Claim 1, further comprising a light guide for transmitting light output from said light source to a treatment site, said light guide having a proximal end receiving light from said aperture and having a distal end for contacting the skin of a patient for said photo-treatment, said light guide distal end being shaped in a convex curve whereby

pressing the light guide gently against the skin of the patient reduces the amount of blood in the skin below the light guide.

11. Apparatus as claimed in Claim 10, wherein said light guide is shaped as a parallelipedic prism with a bull-nosed projection on said distal end.

12. Apparatus as claimed in Claim 1, further comprising a light guide for transmitting light output from said light source to a treatment site, said light guide having a proximal end receiving light from said aperture and having a distal end for contacting the skin of a patient for said photo-treatment, said light guide distal end being shaped in a concave manner whereby to relieve pressure applied to the skin by the light guide in regions where blood is a target of said light output.

13. Apparatus as claimed in Claim 1, further comprising a power supply connected to the light source for providing power input to the light source, wherein said power supply is operable to provide a power output pulse or pulse train to drive said light source to produce said light output pulse or pulse train, during which light output pulse or pulse train for at least 80% of the light output period (i.e. the duration of a single pulse or the aggregate of the duration of the pulses within a pulse train excluding intervals between pulses) the light power output is from 75 to 125% of the time-weighted average light power output during the light output period.

14. Apparatus as claimed in Claim 13, wherein for at least 90% of the light output period the light power output is from 75 to 125% of the time-weighted average light power output during the light output period.

15. Apparatus as claimed in Claim 13, wherein means is provided for adjusting said time-weighted average light power output.

18. Apparatus as claimed in Claim 1, further comprising a filter mounting for receiving a second filter having high filtration characteristics suitable to pass only selected wavelengths

of light so as to dispose said second filter in a light path from said light source which light path also includes said filter comprising water, sensor means for detecting the presence and nature of a said second filter in said filter mounting, and interlock means for preventing operation of said light source to carry out photo-treatment except when a said second filter appropriate to an intended photo-treatment is present in said mounting and/or for providing an alarm signal if a said appropriate second filter is not present in said mounting.

23. Apparatus as claimed in Claim 1, wherein said gas-filled arc lamp is a xenon or krypton lamp.

24. Apparatus as claimed in claim 13, wherein the power supply is coupled to a capacitor, a charging circuit adapted for charging the capacitor to a preselected voltage, a resistor in series between said capacitor and said light source and a discharge switch operable to change from a non-conductive state to a conductive state to cause said capacitor to discharge said light source and back to said non-conductive state again.

25. Apparatus according to Claim 24, wherein the light source is an arc lamp and the power supply comprises a simmer generator adapted for feeding the arc lamp with power at a level which is sufficient to keep the arc in the conductive state.

37 C.F.R. § 41.37(c)(1)(ix) – Evidence appendix

None

37 C.F.R. § 41.37(c)(1)(x) – Related proceedings appendix

None